

REMARKS

Claims 1-8 and 10-18 are pending in the application. Claims 1 and 14 were amended to more particularly point out and distinctly claim the present invention. Claim 8 was amended to address the indefiniteness rejection. Previous claim 9 was canceled and rewritten as new claim 18 to address the claim objection.

The Summary of the Invention section was shortened in accordance with the Examiners request.

For at least the reasons set forth below, withdrawal of all outstanding objections and rejections is respectfully requested.

Specification

In response to the Examiners request that the applicants shorten the Summary of the Invention, the previous contents of the DISCLOSURE OF THE INVENTION section were deleted and moved into the previous BEST MODE FOR CARRYING OUT THE INVENTION section, which was renamed as the DETAILED DESCRIPTION OF THE INVENTION section. A new BRIEF SUMMARY OF THE INVENTION which is less than one page in length was added to replace the deleted DISCLOSURE OF THE INVENTION section. The language of the new BRIEF SUMMARY OF THE INVENTION section is fully supported by the language that was moved to the new DETAILED DESCRIPTION OF THE INVENTION section and by claims 1 and 14.

Claim Objections and Rejections

Claim 8 was amended to address the rejection under 35 U.S.C. § 112, second paragraph. Previous claim 9 was canceled and rewritten as new claim 18 to address the claim objection. Accordingly, the claim objection and rejection are now moot.

Prior Art Rejections

Claims 1, 3-8 and 14-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,161,097 (Ikeda).

Claims 2 and 11-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda.

Claims 9-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda in view of U.S. Patent No. 6,975,098 (Vinciarelli).

Claims 16-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda in view of U.S. Patent No. 5,297,203 (Rose).

For the reasons set forth below, all of these rejections are respectfully traversed.

1. Patentability of independent claims 1 and 14 over Ikeda.

Claims 1 and 14 recite, in part, (underlining added for emphasis):

a bypass switch shorting between the input and output of said DC-DC converter; and

a bypass control section maintaining said bypass switch in the ON state during non-operation of said DC-DC converter, and at the start of said switching operation of said DC-DC converter, further maintaining said bypass switch in the ON state for a predetermined time after the start of said switching operation.

Claims 1 and 14 each recite that the bypass control section maintains the bypass switch in the ON state for a predetermined time after the start of the switching operation of the DC-DC converter. This limitation is not disclosed or suggested in Ikeda.

The Examiner states that Fig. 1 and column 4, lines 13-24 of Ikeda discloses the claimed bypass control section. The Examiner equates the claimed bypass switch to the latching relay 4 of Fig. 1 of Ikeda. The Examiner then states that the Ikeda bypass control section comprises a comparator (item 5), as in the present application, and further comprises a controller (item 6) and that these components combine to act as a switching delay for the bypass switch. However, Ikeda does not disclose or suggest a bypass control section that maintains the bypass switch in the ON state for a

predetermined time after the start of the switching operation of the DC-DC converter, as recited in claims 1 and 14 of the present application.

Ikeda discloses in column 3, line 67 through column 4, lines 24 that (underlining added for emphasis):

The output voltage V1 of the battery 1 is detected through voltage dividing resistors R3 and R4, and is compared with a reference voltage Vb corresponding to the reference voltage Vs shown in FIG. 2 by a comparator 5. If the output voltage V1 of the battery 1 is higher than the reference voltage Vb, the output signal of the comparator 5 goes HIGH. If the output voltage V1 of the battery 1 is lower than the reference voltage Vb, the output signal of the comparator 5 goes LOW. The oscillator 25 of the DC-DC converter 2 is controlled by the output signal of the comparator 5. When the output signal of the comparator 5 is HIGH, the oscillator 25 is stopped and the transistor 22 is turned off to hold the DC-DC converter 2 inoperative.

The output signal of the comparator 5 is used also as a control signal for controlling the latching relay 4, i.e., a bypass switch. When the output signal of the comparator 5 is HIGH, a relay controller 6 sets the latching relay 4 to an ON state, and sets the latching relay 4 to an OFF state when the output signal of the comparator 5 is LOW. Thus, the latching relay 4 is set to an ON-state while the output voltage V1 of the battery 1 is higher than the reference voltage Vs to connect the battery 1 directly to the load circuit 3, so that the power of the battery 1 can be supplied to the load circuit 3 without loss.

The DC-DC converter 2 of Ikeda is only operational when the output voltage V1 of the battery 1 is lower than the reference voltage Vb, causing the output signal of the comparator 5 to go LOW. The latching relay 4 is set to an OFF state when the output signal of the comparator 5 is LOW. Thus, unlike the invention recited in claims 1 and 14 of the present application, the latching relay 4 (bypass switch) of Ikeda is NOT maintained in an ON state for ANY time after the start of the operation of the DC-DC converter 2. In fact, the simultaneous switching ON of the latching relay 4 (bypass switch) and switching OFF of the DC-DC converter is precisely the deficiency in the prior art that is remedied by the present invention, which maintains the bypass switch in the ON state for a predetermined time after the start of the switching operation (see detailed discussion at page 12, line 2 through page 13, line 21). For this reason, Ikeda

does not disclose or even remotely suggest the invention recited in claims 1 and 14. In fact, the Ikeda patent teaches away from maintaining the bypass switch in the ON state.

Accordingly, claims 1 and 14 are believed to be patentable over the applied reference.

2. Patentability of the dependent claims

The dependent claims are believed to be patentable over the applied references for at least the reason that they are dependent upon allowable base claims and because they recite additional patentable elements and steps. None of the secondary references make up for (disclose or suggest) the deficiencies of the Ikeda patent as discussed above.

Conclusion

Insofar as the Examiner's rejections and objections were fully addressed, the present application including claims 1-8 and 10-18, as amended, is in condition for allowance. Issuance of a Notice of Allowability of all pending claims is therefore requested.

Respectfully submitted,

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